

Patent claims:

1. Process for preparing an aqueous dispersion, by
  - a) using water and emulsifier to form an initial charge,
  - b) adding from 25.0 to 45.0 parts by weight of a first composition comprising
    - A) from 50.0 to 99.9 parts by weight of alkyl methacrylates having from 1 to 20 carbon atoms in the alkyl radical,
    - B) from 0.0 to 40.0 parts by weight of alkyl acrylates having from 1 to 20 carbon atoms in the alkyl radical,
    - C) from 0.1 to 10.0 parts by weight of crosslinking monomers and
    - D) from 0.0 to 8.0 parts by weight of styrenic monomers of the general formula (I)



20 where each of the radicals R<sup>1</sup> to R<sup>5</sup>, independently of the others, is hydrogen, a halogen, a C<sub>1-6</sub>-alkyl group or a C<sub>2-6</sub>-alkenyl group, and the radical R<sup>6</sup> is hydrogen or an alkyl group having from 1 to 6 carbon atoms,

25 and polymerizing to a conversion of at least 85.0% by weight, based on the total weight of components A), B), C) and D),

- 30 c) adding from 35.0 to 55.0 parts by weight of a second composition comprising

E) from 80.0 to 100.0 parts by weight of (meth)acrylates

F) from 0.05 to 10.0 parts by weight of cross-linking monomers and

5 G) from 0.0 to 20.0 parts by weight of styrenic monomers of the general formula (I),

10 and polymerizing to a conversion of at least 85.0% by weight, based on the total weight of components E), F) and G),

15 d) adding from 10.0 to 30.0 parts by weight of a third composition comprising

H) from 50.0 to 100.0 parts by weight of alkyl methacrylates having from 1 to 20 carbon atoms in the alkyl radical,

I) from 0.0 to 40.0 parts by weight of alkyl acrylates having from 1 to 20 carbon atoms in the alkyl radical and

20 J) from 0.0 to 10.0 parts by weight of styrenic monomers of the general formula (I)

25 and polymerizing to a conversion of at least 85.0% by weight, based on the total weight of components H), I) and J),

where the parts by weight given for the compositions b), c) and d) give a total of 100.0 parts by weight,

30 characterized in that

e) each polymerization is carried out at a temperature in the range from above 60 to below 90°C and

f) the relative proportions of all of the substances are selected in such a way that the total weight of components A) to J), based on the total weight of the aqueous dispersion, is greater than 50.0% by weight.

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2. Process according to Claim 1, characterized in that an aqueous dispersion is prepared which comprises less than 5.0% by weight of coagulate, based on its total weight.  
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3. Process according to Claim 1 or 2, characterized in that 90.00 to 99.99 parts by weight of water and from 0.01 to 10.00 parts by weight of emulsifier are used to form an initial charge,  
10 where the parts by weight given give a total of 100.00 parts by weight.
4. Process according to at least one of the preceding claims, characterized in that use is made of an anionic or non-ionic emulsifiers.  
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5. Process according to at least one of the preceding claims, characterized in that an aqueous emulsion which comprises a seed latex is used to form an initial charge.  
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6. Process according to Claim 5, characterized in that a seed latex whose particle radius, measured by the Coulter method, is in the range from 5.0 to 20.0 nm is used to form an initial charge.  
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7. Process according to at least one of the preceding claims, characterized in that an aqueous emulsion which comprises an alkyl alcohol having from 12 to 30 carbon atoms in the alkyl radical is used to form an initial charge.  
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8. Process according to at least one of the preceding claims, characterized in that the polymerization in steps b) to d) is initiated using a peroxodisulphate, preferably using ammonium and/or alkali metal peroxodisulphate.  
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9. Process according to at least one of the preceding claims, characterized in that the relative proportions of all of the substances are selected in such a way that core-shell particles are obtained with an overall radius, measured by the Coulter method, in the range from 150.0 to less than 250.0 nm.  
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10. Process according to at least one of the preceding claims, characterized in that the second and the third monomer mixture are metered in as required by consumption.  
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11. Core-shell particles obtainable by a process according to at least one of the preceding claims, in particular according to Claim 6.  
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12. Moulding composition comprising, based in each case on its total weight:  
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  - A) from 1.0 to 50.0% by weight of at least one core-shell particle according to Claim 11;
  - B) from 1.0 to 99.0% by weight of at least one (meth)acrylic polymer,
  - C) from 0.0 to 45% by weight of styrene-acrylonitrile polymers, and  
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  - D) from 0.0 to 10.0% by weight of other additives where the percentages by weight give 100.0% by weight in total.
30. 13. Moulding composition according to Claim 12, characterized in that the (meth)acrylic) [sic] polymer encompasses, based in each case on its total weight,
  - a) from 50.0 to 100.0% by weight of alkyl methacrylate repeat units having from 1 to 20 carbon atoms in the alkyl radical,
  - 35b) from 0.0 to 40.0% by weight of alkyl acrylate repeat units having from 1 to 20 carbon atoms in the alkyl radical and

c) from 0.0 to 8.0% by weight of styrenic repeat units of the general formula (I), where the percentages by weight give 100.0% by weight in total.

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14. Moulding composition according to Claim 12 or 13, characterized in that the moulding composition comprises styrene-acrylonitrile copolymers, where the styrene-acrylonitrile copolymers were obtained by polymerizing any mixture which is composed of from 70 to 92% by weight of styrene from 8 to 30% by weight of acrylonitrile and from 0 to 22% by weight of other comonomers, based in each case on the total weight of the monomers to be polymerized.

15. Moulding composition according to at least one of Claims 12 to 14, characterized in that it comprises, based on its total weight, from 0.1 to 10.0% by weight of another polymer whose weight-average molecular weight is higher by at least 10% than that of the (meth)acrylic polymer b) [sic].

16. Moulding obtainable from a moulding composition according to at least one of Claims 12 to 15.

17. Moulding according to Claim 16, characterized in that the moulding has a Vicat softening point ISO 306 (B50) of at least 85, preferably at least 90 and particular preferably at least 93°C, a notched impact strength NIS (Charpy 179/1eA) to ISO 179 of at least 6.0 kJ/m<sup>2</sup> at 23°C and of at least 2.5 kJ/m<sup>2</sup> at -10°C, a modulus of elasticity to ISO 527-2 of at least 1500 Pa s, a haze to ASTM D 1003 (1997) of at most 2.5%, a transmittance (D 65/10°) to DIN 5033/5036 of at least 88.5%.